

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)



Applicant's or agent's file reference 86.62.77803/001	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/GB 03/03714	International filing date (day/month/year) 27.08.2003	Priority date (day/month/year) 27.08.2002
International Patent Classification (IPC) or both national classification and IPC C07D239/95		
Applicant MELACURE THERAPEUTICS AB et al.		

- This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 5 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

 These annexes consist of a total of sheets.

- This report contains indications relating to the following items:
 - I ☒ Basis of the opinion
 - II ☐ Priority
 - III ☒ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV ☐ Lack of unity of invention
 - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☐ Certain documents cited
 - VII ☐ Certain defects in the international application
 - VIII ☐ Certain observations on the international application

Date of submission of the demand 06.02.2004	Date of completion of this report 02.07.2004
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Fanni, S Telephone No. +49 89 2399-8712 

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/GB 03/03714**

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-26 as originally filed

Claims, Numbers

1-22 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/GB 03/03714**

III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application,

☒ claims Nos. 12-22

because:

☒ the said international application, or the said claims Nos. 12-22 relate to the following subject matter which does not require an international preliminary examination (specify):

see separate sheet

☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

☐ no international search report has been established for the said claims Nos.

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

☐ the written form has not been furnished or does not comply with the Standard.

☐ the computer readable form has not been furnished or does not comply with the Standard.

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1,9,10
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	1,9,10
Industrial applicability (IA)	Yes: Claims	1,9,10
	No: Claims	

2. Citations and explanations

see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB 03/03714

ITEM III

Claims 12-22 relate to subject-matter considered by this Authority to be covered by the provisions of Rule 67.1(iv) PCT. Consequently, no opinion will be formulated with respect to the industrial applicability of the subject-matter of these claims (Article 34(4)(a)(i) PCT). See also the paragraph on : "Industrial applicability" in item V below.

ITEM V

Reference is made to the following documents:

- D1: Journal Of Medicinal Chemistry, 2000, 43, 3852-3861
- D2: Journal Of Medicinal Chemistry, 2001, 44, 2391-2402
- D3: US-A-5698556
- D4: WO-A-9936409

Novelty (Article 33(2) PCT)

The present subject matter differs from D1 on account of the two disclaimers of present claim 1 (cf compounds 8a, 8b, 1a and 1b).

The present subject matter differs from D2 on account of the present glutamate moiety.

The present subject matter differs from D3 and D4 on account of the present bridging group W.

Inventive step (Article 33(3) PCT)

The present subject matter is directed to 2,4-aminoquinazoline and 2,4-aminopyridopyrimidine derivatives which are Dihydrofolate Reductase (DHFR) inhibitors.

D1 is considered to be the closest prior art and discloses 2,4-aminoquinazoline and 2,4-aminopteridine derivatives which also are DHFR inhibitors. The compounds according to D1 are disclaimed in present claim 1. DHFR inhibitors are also disclosed by D2-D4.

Thus, compounds which are known from the prior art to be DHFR inhibitors are

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB 03/03714

presently disclaimed. It is also noted that D3 and D4 disclose compounds where the present moiety W has been replaced by, inter alia, an amino spacer (cf. D4, claim 1; D3, claims 1-5). However, the equivalence between the present moiety W and the amino spacers according to D3 and D4 has been disclosed by D2 (cf. scheme 1 and 3).

It appears therefore that the skilled person, faced with the problem of providing further DHFR inhibitors, would derive the present subject matter directly from the teaching of the prior art without the exercise of inventive skill.

The problem to be solved by the present subject matter is therefore considered to be the provision of DHFR inhibitors which exhibit unexpected properties with respect to the structurally closest prior art compounds, i.e. unexpectedly solve a problem not yet solved. Such properties or effects being not shown in the present description, an inventive step cannot be acknowledged for the present subject matter.

INDUSTRIAL APPLICABILITY (Article 33(4) PCT)

For the assessment of the present claims 12-22 on the question whether they are industrially applicable, no unified criteria exist in the PCT Contracting States. The patentability can also be dependent upon the formulation of the claims. The EPO, for example, does not recognize as industrially applicable the subject-matter of claims to the use of a compound in medical treatment, but may allow, however, claims to a known compound for first use in medical treatment and the use of such a compound for the manufacture of a medicament for a new medical treatment.